A1

separating the fiber material within said fluffer so as to increase a specific surface thereof, thereby optimizing accessibility of educts to the fiber surfaces.

A2

13. (Amended) The process of claim 1, said $CaCO_3$ being added to the fiber stock suspension at least one of prior to, in and after said fluffer.

REMARKS

Claims 1-32 are pending, with 20-32 having been withdrawn and claims 1-19 considered and rejected by the examiner. In response, claims 1 and 13 have been amended. Reconsideration and allowance of claims 1-19 are respectfully requested.

Claims 1-14, 18, and 19 have been rejected under 35 USC 103(a) as being unpatentable over U.S. Patent 5,223,090 (Klungness, et al) in view of U.S. Patent No. 5,810,973 (Carlsmith et al).

Klungness, et al. disclose the precipitation of calcium carbonate in cellulosic fibers containing about 40%-80% moisture, by mixing with the fibers from about 10% to about 40% of calcium oxide or calcium hydroxide. The process uses de-watered crumb pulp containing less moisture than the free moisture level (column 5, lines 47-49). Klungness et al. define quite clearly the type of pulp which they use, which is de-watered crumb pulp. In column 5, beginning at line 27, Klungness et al. define the "free moisture level" to be the "level of moisture for a particular pulp at which free water appears on the surface". Above the free moisture level, the pulp fibers become dispersed in the water, and slurry is formed. (column 5, lines 39-41) Klungness et al. particularly and specifically state that de-watered crumb pulp is utilized "which contains less moisture than the free moisture level". Therefore, it is clear that a slurry is not used in the teaching of Klungness et al.

The use of a non-slurry is consistent with the teaching of the process of Klungness et al. In the paragraph beginning at column 6, line 8, Klungness et al. specifically state an intent to eliminate or minimize the presence of free surface moisture on the fibers, stating a desire that the moisture present be captive within the hollow fiber interiors. Restricting the presence of moisture to the interior of the fibers is fundamental to the process of Klungness, et al. Klungness et al. theorize that, in their process, hydrostatic forces draw calcium hydroxide into the cell walls and hollow interior of the cellulose fibers, during the exothermic reaction that occurs between the calcium oxide or calcium hydroxide and the water in the cells. The reaction occurs at the surface openings of the fiber, which is the site to which the presence of water is restricted, since only minimal surface moisture is present in crumb pulp. The amount and location of water is restricted, by staying below the free moisture level of the pulp, so that calcium hydroxide is drawn into the cells. Carbon dioxide is added, with mixing, and calcium carbonate is precipitated within the cellulosic fibers. Thus, fundamental to the process of Klungness et al. are the control of moisture in the pulp by minimizing surface moisture through the use of crumb pulp, and the subsequent use of direct precipitation of calcium carbonate in the cells.

In contrast to the teaching of Klungness et al., claim 1 of the present application recites treating a "fiber stock suspension," and adding "to the fiber suspension" at least calcium carbonate as one additive. This is in stark contrast to the process taught by Klungness et al., which specifically avoids the use of a fiber suspension through the unequivocal teaching that crumb pulp should be used, and adds no calcium carbonate during the process, instead adding calcium oxide or calcium hydroxide to the crumb pulp to create an exothermic reaction, with a subsequent precipitation of calcium carbonate in the crumb pulp as part of the process.

Thus, the process recited in claim 1 of the present invention is fundamentally different than the process of Klungness et al. Klungness et al uses de-watered crumb pulp, not a fiber stock suspension, and uses calcium hydroxide or calcium oxide as additives, not calcium carbonate as recited in claim 1. Klungness et al. use the mechanics of the precipitation reaction in a non-slurry to load the filler in the hollow cell interiors. This is fundamentally different than the process recited in the pending claims, in which calcium carbonate is directly added to a pulp suspension.

Carlsmith et al disclose an apparatus 10 (Figs. 1-3) for fluffing high consistency pulp and for promoting intimate contact between high consistency pulp and a gaseous bleaching reagent. Carlsmith et al disclose nothing with respect to the process recited in the pending claims, wherein, a fiber suspension is processed in a fluffer with the addition of calcium carbonate to the suspension. Thus, Carlsmith et al adds nothing to overcome the deficiencies in the teaching of Klungness et al. with respect to the pending claims, as summarized above. Therefore, it is respectfully submitted that the invention recited in independent claim 1 and dependent claims 2-14, 18 and 19 is not obvious from the teaching of Klungness et al., nor the teaching of Carlsmith et al., nor the combination thereof, and claims 1-14, 18 and 19 should be allowed.

The teaching of U.S. Patent 4,510,020 (Green et al.) has been added to the teachings of Klungness et al. and Carlsmith et al. in rejecting claims 15-17. The process of Green et al. teaches agitating, separating, and vigorously washing; and, it is respectfully submitted, does not overcome the deficiencies of the primary combination of Klungness et al. and Carlsmith et al., as summarized above. Therefore, claims 15-17 should be allowable as dependent claims from now allowable claim 1.

Claims 1-14, 18, and 19 have also been rejected as being unpatentable under 35 USC 103(a) over the teaching of U.S. Patent 6, 355,138 (Doelle).

Doelle discloses a fiber loading apparatus 10 (Figs.1) that includes a reactor 12 and a reactant gas generator 14. The reactant gas generator generates a reactant gas that is injected into reactor 12 and is used in a chemical reaction to form calcium carbonate which is loaded into and on the fibers within the reactor. The reactor receives a fiber suspension concurrently with a reactant solid 30, used as a reactant in a chemical reaction to produce calcium carbonate as disclosed. Reactant 30 can be in the form of calcium oxide and/or calcium hydroxide used in the chemical reaction within reactor 12 (column 3, lines 15-28). Thus, Doelle discloses a process similar to that of Klungness et al., in that pulp and reactants are combined, with a precipitation reaction occuring in the presence of the pulp. For the reasons stated above with respect to Klungness et al., it is respectfully submitted that Doelle does not teach the process now recited in claim 1.

Claims 15-17 have also been rejected on the combination of Doelle in view of Green et al. For the reasons stated above with respect to the combination of Klungness et al., Carlsmith et al. and Green et al., it is respectfully submitted that Green et al. does not overcome the deficiencies of Doelle as a primary reference. Therefore, claims 15, 16, and 17 also should be allowed.

It is respectfully submitted that the present invention, as recited in amended claim 1, is a process not taught by the references cited alone or in combination. The cited prior art does not teach or suggest a process in which calcium carbonate is added to a fiber pulp suspension, in the manner recited, for the purpose of fiber loading.

For the foregoing reasons, Applicants submit that no combination of the cited references teaches, discloses or suggests the subject matter of the amended claims. The pending claims are therefore in condition for allowance, and Applicants respectfully request withdrawal of all rejections and allowance of the claims.

In the event Applicants have overlooked the need for an extension of time, an additional extension of time, payment of fee, or additional payment of fee, Applicants hereby conditionally petition therefor and authorizes that any charges be made to Deposit Account No. 20-0095, TAYLOR & AUST, P.C.

Should any question concerning any of the foregoing arise, the Examiner is invited to telephone the undersigned at (260) 897-3400.

Respectfully submitted,

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TTT5/dc

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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Box Non-Fee Amendment, Commissioner for Patents, Washington, DC 20231, on: June 13, 2002.

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Signature

June 13, 2002
Date

Title: A PROCESS AND A FLUFFER DEVICE FOR TREATMENT OF A FIBER STOCK SUSPENSION
Application Serial No.: 09/863, 594 Group: 1731 Examiner: M. Alvo

ATTACHMENT A: MARKED-UP COPY SHOWING AMENDMENTS

IN THE CLAIMS

Please amend claims 1 and 13 as follows:

1. (Amended) A process of treating a fiber stock suspension for at least one of paper and cardboard production, said process comprising the steps of:

providing the fiber stock suspension, with a moistened fiber material having fiber surfaces;

placing the fiber suspension in a fluffer;

adding at least one additive to the fiber suspension, at least one said additive being $CaCO_3$; and

separating the fiber material within said fluffer so as to increase a specific surface thereof, thereby optimizing accessibility of educts to the fiber surfaces.

13. (Amended) The process of claim 1, [wherein one said additive is $CaCO_3$,] said $CaCO_3$ being added to the fiber stock suspension at least one of prior to, in and after said fluffer.